

A photograph of soldiers in a field. In the foreground, a soldier in full combat gear, including a helmet, goggles, and a rifle, is walking towards the left. In the background, two other soldiers are visible, and a helicopter is flying in the sky. The scene is set in a grassy field with trees in the distance.

PEO STRI



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# Immersive Training

- Train key competencies such as mental resilience, cognitive agility, emotions, social/culture awareness
  - Replication of sights, sounds, smells and touch to enhance realism and add stressors to the immersive environment
  - Model natural movements/gestures in the virtual environment such as turning, kneeling, waving, weapon mechanics and locomotion
  - Capabilities to include implementation of low cost helmet mounted displays and see through goggles with improved acuity and field of view
  - Personal intelligent tutoring, performance feedback and automated after action review
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- **Programs:** CCTT DSTS, EST, GFT, CDT, IEWTPT, UOTS

# Medical Simulation

- Patient/mannequin simulators that replicate human tissue
- Medical simulations to support combat medics, surgical support and ER team training
- Capabilities for Combat Medics to treat and administer aid to patients during live training exercises
- Realistic casualty assessment algorithms to replace existing MILES casualty cards

• **Programs:** MSTC, VA/VHA, OneTESS, I-MILES, HITS, UOTS, CTC-IS



# Force on Force/Target Engagement Visualization Tool

- Live Force on Force Visualization
  - Support for both Force on Force and Force on Target engagement effects visualization
  - Train the ability to adjust fire
    - Forward observers see simulated mortar and artillery round impacts with appropriate depth perception
    - Mk-19, M203/320 gunners visualize simulated grenade impacts
- **Programs:** OneTESS, A-TESS, HITS, CTC-IS, T&TI, small arms live fire



# High Resolution Radar

- Radar processing and signature measurements for munitions, sub-munitions, and high altitude missile intercepts
  - Process large amounts of high resolution data
  - Capture and process highly detailed data on impact and dispersion
  - Determine final locations of all shrapnel to facilitate safe removal
  - Perform post mission 3D visualization for distribution and lethality assessment

• **Programs:** RRRP

# Synthetic Natural Environment

- Common/reusable environmental models/features
- L/V correlation: Enhance terrain correlation between high resolution live training and medium resolution virtual
- Persistent rapid updates to existing run-time terrain databases
- Complex Natural Cave Systems
- Automated feature extraction from imagery
- Automated imagery alignment

• **Programs**: Mission Rehearsal Systems, CDT, CCTT, VCTS, RVTT, RCTS, CEVT, SE Core, WARSIM, OneSAF, T&TI

# Physics Based Effects - SNE

- Common/Reusable Dynamic Physics based effects of battlefield activities:
  - Realistic ammo effects on humans, vehicles, buildings and terrain
  - Progressive structure damage
  - High fidelity building structural damage effects
  - CBNRE effects
  - Civil Engineering efforts
  - Collision effects
  - Soil/water characteristics
  - Weather and atmospheric effects
  - Route clearance/IED defeat
  - Construction equipment
- **Programs**: Mission Rehearsal Systems, CDT, VCTS, CCTT, RVTT, CEVT, SE Core, WARSIM, OneSAF

# Modeling Enhancements

- High fidelity “pattern of life” modeling (i.e., crowd behaviors)
- Common and realistic virtual life form representations and behaviors
- Physics based dynamic thermal representation
- Modeling of obscurants/illuminations and their impacts on sensors
- Radio communications and network modeling
- Weather and atmospheric simulation for real time training systems
- Cyber Warfare Modeling in Constructive Simulation

• **Programs:** SE Core, CDT, DSTS, CCTT, AGTS, CEVT, VCTS, GFT, LVC-IA, OneSAF



# LVC Embedded Test & Training

- Enhance Embedded Training and Mission Rehearsal capabilities by using visual, aural and haptic cues.
  - Host simulation and training software on tactical platform processors
  - Access to operational platform data to support training
  - Ensure separability of operational and training data
  - Ensure safety of equipment and personnel during embedded LVC training events
  - Simulation Web services in support of Mission Command interoperability
  - Enable embedded test instrumentation
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- **Programs**: DRTS, I-MILES, CVTESS, OneTESS, OneSAF, (emerging embedded training and mission rehearsal requirements)



# Real-Time Target Thermal Representation

- Highly accurate thermal representation on a live fire target silhouette
- Thermal generation capability that prevents silhouette damage
- Thermal images driven by SAF models to project multiple targets simultaneously and changes in posture of target
- Multi-spectral personnel targets for electro-optic sensor testing

• **Programs:** Live Fire Training Systems (TRACR, DRTS, IMTS), PTS

# Laser Enhancements for Test and Training

- Penetration of obscurants such as fog, dust and smoke
- Laser code that can transmit additional data to assist with pairing roll-off
- Lasers and detectors that can support legacy MILES codes and the next generation TESS

• **Programs:** I-MILES and A-TESS, T&TI

# GPS Denied Environments

- Time Space Position Information Instrumentation for GPS denied environments
  - Measure and time tag 3-D location of systems-under-test (SUT) in urban test event
  - Seamlessly track SUT or personnel as they maneuver inside and outside urban structures and vehicles
- Remote control of aerial and ground targets in GPS denied environments
  - Provide reliable TSPI to remote target control system for improved tracking and safe control of aerial and ground targets
- **Programs:** JUTC, UOTS, AGATCS



# Test and Training Cyber Warfare

- Enhance threat cyber capabilities for threat Computer Network Operations, threat Computer Network Attack and Computer Network Defense
- Remote mission command of multiple cyber offensive platforms
- Modeling and execution of offensive cyber activities providing force multiplier effects

• **Programs:** NETT, ITF, TIEW-ENV



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# Non-Contact Hit Sensor

- A sensor that provides accurate identification of penetration point
  - Non-gated operation – trigger pull not required
  - 2 or 3 dimensional areas of interest
  - Identification of objects entering field/zone
    - By caliber
    - Munitions vs debris
  - Must support supersonic, transonic and sub sonic munitions
  - Support live fire with minimal failures
- **Programs:** DRTS/DAGIR, UOTS, IMTS, TRACR, EST



# High Fidelity Orientation Sensor

- Accurate and Affordable High Fidelity Weapon Orientation Sensor
- High fidelity pointing vectors for weapons within their operational environments (i.e. ferrous metals)
- Accurate orientation to track non-line of sight weapons (i.e. MK-19, M203/320, and XM25)
- High fidelity weapon orientation tracking for direct fire small arms
- Simple calibration method

• **Programs:** DSTS, EST, OneTESS, A-TESS



# Unmanned Aerial System Training Integration

- Instrumented Live capability at the CTCs and Homestations
    - Video feeds
    - Position information
    - Sensor feeds
  - Track the aircraft and Ground Control Station (GCS)
  - Support Manned-Unmanned Engagements with helicopters
  - Access data when GCS is located at alternate site (remote)
  - Virtual stimulation of GCS
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- **Programs:** OneTESS, A-TESS

- **Technical sessions throughout the year**
- **Capability gap discussions are always welcome**



# Acronym List

- AGATCS: Army Ground and Aerial Target Control System
- AGTS: Advanced Gunnery Training System
- ATESS: Army Tactical Engagement Simulation System
- CBNRE: Chemical, Biological, Nuclear, Radiological, and/or Explosive
- CCTT: Close Combat Tactical Trainer
- CDT: Common Driver Trainer
- CEVT: Construction Equipment Virtual Trainers
- CTC-IS: Combat Training Center - Instrumentation System
- CVTESS: Combat Vehicle Tactical Engagement Simulation System
- DAGIR: Digital Air-Ground Integration Range
- DIS: Distributed Interactive Simulation
- DRTS: Digital Range Training System
- DSTS: Dismounted Soldier Training System
- EST: Engagement Skills Trainer
- GFT: Games For Training
- HITS: Homestation Instrumentation Training System
- IEWTPT: Intelligence Electronic Warfare Tactical Proficiency Trainer
- I-MILES: Improved Multiple Integrated Laser Engagement System
- I-MTS: Integrated Military Operations on Urban Terrain (MOUT) Training System
- ITF: Integrated Threat Force
- JUTC: Joint Urban Test Capability
- LVC-IA: Live, Virtual, Constructive-Integrating Architecture
- MILES: Multiple Integrated Laser Engagement System
- MMTS: Mobile Multi-sensor Time-Space-Position Information (TSPI) System
- MSTC: Medical Simulation Training Center
- NETT: Network Exploitation Test Tool
- OneSAF: One Semi Automated Force
- OneTESS: One Tactical Engagement Simulation System
- PTS: Precision Target Signatures
- RCTS: Route Clearance Training Services
- RRRP: Range Radar Replacement Program
- RVTT: Reconfigurable Vehicle Tactical Trainer
- SECORE: Synthetic Environment Core
- SWaP-C: Size, Weight, Power and Cost
- T&TI: Test & Training Initiative
- TIEW-ENV: Threat Intelligence Electronic Warfare Environment
- TRACR: Targetry Range Automated Control and Recording
- TSPI: Time-Space-Position Information
- UOTS: Urban Operations Training System
- VA: Veterans Administration
- VBS2: Virtual Battlespace 2
- VCTS: Virtual Clearance Training Suite
- WARSIM: Warfighters' Simulation